

In the Claims

1. (Previously Presented) A method for transmitting information in an optical communication system, comprising:

generating a plurality of optical information signals each comprising a wavelength distinct carrier signal having the non-intensity characteristic modulated with a data signal;

multiplexing the plurality of optical information signals to generate a wavelength division multiplexed (WDM) signal, the WDM signal having a minimum channel spacing that is greater than $(N+0.4)B$ and less than $(N+0.6)B$, where B comprises the symbol rate of the WDM signal and N is an integer;

transmitting the WDM signal over an optical link; and

amplifying the WDM signal over a length of the optical link with a plurality of co-launched amplification signals traveling in a same direction as the WDM signal in the optical link.

2. (Previously Presented) The method of Claim 1, wherein the co-launched amplification signal travels at a substantially same speed as the WDM signal.

3. (Previously Presented) The method of Claim 1, wherein the co-launched amplification signal comprises a wavelength lower than those of the optical information signals.

4. (Previously Presented) The method of Claim 1, wherein the WDM signal is amplified over the length of the optical link with the co-launched amplification signal by distributed Raman amplification (DRA).

5. (Canceled)

6. (Original) The method of Claim 1, wherein the phase of the optical carrier signal is modulated with the data signal.

7. (Original) The method of Claim 1, wherein the frequency of the optical carrier signal is modulated with the data signal.

8. (Previously Presented) The method of Claim 1, further amplifying the WDM signal over a second length of the optical link with a counter-launched amplification signal traveling in an opposite direction as the WDM signal and the co-launched amplification signal.

9. (Previously Presented) The method of Claim 1, wherein the WDM signal and the co-launched amplification signal travel in the first direction, further comprising:

generating a second plurality of optical information signals each comprising a wavelength distinct carrier signal having the non-intensity characteristic modulated with a data signal;

multiplexing the second plurality of optical information signals to generate a second wavelength division multiplexed (WDM) signal, the second WDM signal having a minimum channel spacing that is greater than $(N+0.4)B$ and less than $(N+0.6)B$, where B comprises the symbol rate of the second WDM signal and N is an integer;

transmitting the second WDM signal over the optical link in a second direction opposite the first direction; and

amplifying the first and second WDM signals over the length of the optical link with the co-launched amplification signal and a counter-launched amplification signal traveling in the second direction.

10. (Previously Presented) The method of Claim 1, wherein generating a plurality of optical information signals further comprises remodulating the optical information signals with a transmission clock frequency using an intensity modulator to generate a multimodulated signal.

11. (Previously Presented) The method of Claim 1, further amplifying the WDM signal in the optical link with a discrete amplifier.

12. (Previously Presented) The method of Claim 11, wherein the discrete amplifier comprises an erbium-doped fiber amplifier (EDFA).

13. (Previously Presented) An optical communication system, comprising:
an optical sender operable to generate a plurality of optical information signals each comprising a wavelength distinct carrier signal having the non-intensity characteristic modulated with a data signal, multiplex the plurality of optical information signals to generate a wavelength division multiplexed (WDM) signal and transmit the WDM signal over the optical link, the WDM signal having a minimum channel spacing that is greater than $(N+0.4)B$ and less than $(N+0.6)B$, where B comprises the symbol rate of the WDM signal and N is an integer;

an optical link operable to transmit the WDM signal; and

a distributed amplifier comprising a pump laser operable to co-launch an amplification signal traveling in a same direction as the WDM signal, the co-launch amplification signal operable to amplify the WDM signal over a length of the optical link.

14. (Previously Presented) The optical communication system of Claim 13, wherein the co-launched amplification signal travels at a substantially same speed as the WDM signal.

15. (Previously Presented) The optical communication system of Claim 13, wherein the co-launched amplification signal comprises a wavelength lower than those of the optical information signals.

16. (Previously Presented) The optical communication system of Claim 13, wherein the WDM signal is amplified over the length of the optical link with the co-launched amplification signal by distributed Raman amplification (DRA).

17. (Canceled)

18. (Original) The optical communication system of Claim 13, wherein the phase of the optical carrier signal is modulated with the data signal.

19. (Original) The optical communication system of Claim 13, wherein the frequency of the optical carrier signal is modulated with the data signal.

20. (Previously Presented) The optical communication system of Claim 13, the distributed amplifier comprising a second pump laser operable to counter-launch a second amplification signal in an opposite direction as the WDM signal, the counter-launched amplification signal operable to amplify the WDM signal over a second length of the optical link.

21. (Previously Presented) The optical communication system of Claim 13, further comprising:

a second optical sender operable to generate a second plurality of optical information signals each comprising a wavelength distinct carrier signal having the non-intensity characteristic modulated with a data signal, multiplex the second plurality of optical information signals to generate a second wavelength division multiplexed (WDM) signal and transmit the second WDM signal over the optical link, the second WDM signal having a minimum channel spacing that is greater than $(N+0.4)B$ and less than $(N+0.6)B$, where B comprises the symbol rate of the second WDM signal and N is an integer;

the optical link operable to transmit the second WDM signal in an opposite direction as the optical information signal; and

the distributed amplifier comprising a second pump laser operable to counter-launch a second amplification signal traveling in the opposite direction as the WDM signal, the co-launched amplification signal and the counter-launched amplification signal operable to amplify the WDM signal and the second WDM signal over the length of the optical link.

22. (Previously Presented) The optical communication system of Claim 13, wherein generating a plurality of optical information signals further comprises remodulating the optical information signals with a transmission clock frequency using an intensity modulator to generate a multimodulated signal.

23.-26. (Canceled)